



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/581,005

05/26/2006

Horst Vestweber

14113-00013-US

8833

23416 7590 01/18/2011  
CONNOLLY BOVE LODGE & HUTZ, LLP  
P O BOX 2207  
WILMINGTON, DE 19899

EXAMINER

CLARK, GREGORY D

ART UNIT

PAPER NUMBER

1786

MAIL DATE

DELIVERY MODE

01/18/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/581,005	VESTWEBER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	GREGORY CLARK	1786	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 December 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-22 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) 2,23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-9,12-22 and 25-28 is/are rejected.
- 7) ☒ Claim(s) 10 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

The examiner acknowledges the receipt of applicants' amendments dated 12/02/2010.

### Claim Rejections - 35 USC § 102

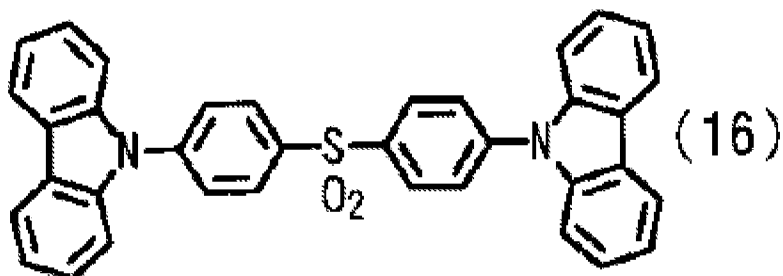
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claims 1, 3, 5, 12-16, 19-21 and 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomio (JP 2004-220931).**

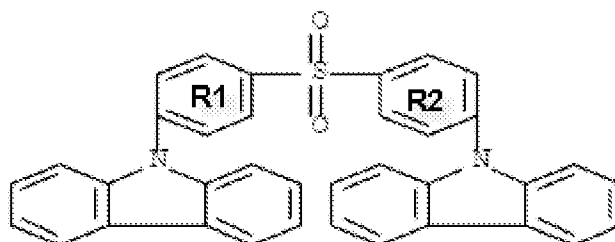
Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d), a certified English translation of the foreign application must be submitted in reply to this action. 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

2. **Regarding Claim 1, 3, 5,** Tomio discloses an organic electroluminescent device which contains organic layers between an anode and a cathode (abstract). The layers include a luminous layer (emission) containing a host (matrix material) and a phosphorescence dopant (emitter) (paragraph 70). The device also includes a hole inhibiting (blocking) layer (abstract) composed of Formula 16 (paragraph 47):



Formula 16 can be represented



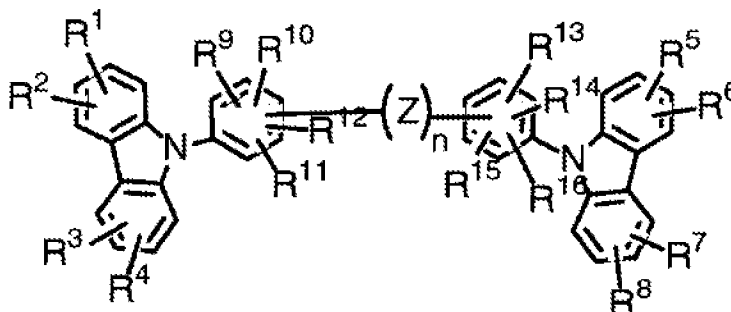
Formula 16 reads on applicants' Formula 4 where R1 and R2 are labeled above;  
Y is S and X is O (per claim 3).

As Tomio does not mention another material in the hole blocking layer, the examiner interprets Formula 16 to be the only material in the layer (per claim5)

3. **Regarding Claim 12**, Tomio discloses that the organic electroluminescent device includes matrix materials that includes organometallic complexes (paragraph 70).

Art Unit: 1786

4. **Regarding Claim 14-16**, Tomio teaches that the phosphorescence emitters such as tris (2-phenylpyridyl) iridium (atomic number 77) (paragraph 169). The examiner notes that in the applicants' specification on page 10 that iridium is listed as a preferred metal.
5. **Regarding Claims 19-21**, Tomio teaches that the organic layer can be applied by vacuum deposition (per claim 19), ink jet method (per claims 20-21) (paragraph 60).
6. **Regarding Claims 25 and 26**, Tomio teaches Formula 16 used in a hole blocking layer of an organic electroluminescent device (per claim 26) which reads on applicants' Formula 4 (as discussed above). Formula 16 can also be represented as Formula 16A (paragraph 39):



[0040]

the inside of a formula,  $R^1 - R^{16}$  -- each -- independent -- a hydrogen atom and a halogen atom. An alkyl group, an aralkyl group, an alkenyl group, a cyano group, an amino group, an acyl group, A carboxyl group, an alkoxy group, an alkoxycarbonyl group, an aryloxy group. An alkylamino group, an aralkyl amino group, a halo alkyl group, a hydroxyl group, . [ whether an aromatic hydrocarbon group or an aromatic heterocycle group which may have a substituent is expressed, and ] Or  $R^1$ ,  $R^2$  and  $R^3$ , and  $R^4$ ,  $R^5$ ,  $R^6$  and  $R^7$ ,  $R^8$  and  $R^9$ ,  $R^{10}$  and  $R^{11}$ ,  $R^{12}$  and  $R^{13}$ ,  $R^{14}$ , and  $R^{15}$  and  $R^{16}$  may combine with each other, respectively, and may form a ring. Also in general formula (I), Z is synonymous.

[0041]

As  $R^1 - R^{16}$ , specifically A hydrogen atom; fluorine atom, Acyl group: carboxyl groups, such as an alkenyl-group; cyano group; amino group; acetyl group of the carbon numbers 2-6, such as aralkyl group; vinyl groups, such as alkyl-group; benzyl of the carbon numbers 1-6, such as halogen atom: methyl groups, such as a chlorine atom and a bromine atom, and an ethyl group: A methoxy group, An alkoxy group of the carbon numbers 1-6, such as an ethoxy basis; A methoxycarbonyl group, An alkoxycarbonyl group of the carbon numbers 2-6 of an ethoxycarbonyl group etc.

where Z is the sulfur dioxide group (Y is C) and R1-R16 can be an organic radical a methyl group.

7. **Regarding Claim 13**, Tomio discloses that the hole block layer and cathode are laminated on the substrate sequentially (abstract).

### Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1786

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**8. Claims 4, 6-9, 17, 22 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomio (JP 2004-220931).**

Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d), a certified English translation of the foreign application must be submitted in reply to this action. 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

**9. Regarding Claim 4,** Tomio teaches the invention of claim 1.

Tomio fails to mention the percentage of the hole blocking material in the hole blocking layer. The applicant claims a concentration of at least 50%.

Hole blocking materials are used to confine the holes to the emissive region of the device to improve the emission efficiency. The amount of a hole blocking material present is viewed as a cause effective variable that controls the confinement of hole that affect the emission efficiency.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have adjusted the amount of the hole blocking material present in hole blocking layer to optimize the blocking of holes which would have included the claimed range, absent unexpected results.

10. **Regarding Claims 6-9**, Tomio teaches Formula 16 or 16A which reads on applicants' Formula 4 (as discussed above). Formula 16A shows that R1-R16 can be an alkyl group (above).

The examiner interprets an alkyl group to be a  $sp^3$  hybridized carbon atom (per claim 7) which is inclusive of a quaternary carbon (per claims 8 and 9) as in the case of a t-butyl alkyl group.

The presence of a  $sp^3$  hybridized carbon atom such as a quaternary carbon in a t-butyl alkyl group would render the molecule non-planar (per claim 6)

11. **Regarding Claim 17**, Tomio mentions that the hole blocking material should have a high glass transition temperature (paragraph 27). Tomio fails to mention a specific glass transition temperature ( $T_g$ ) of the hole blocking material. Applicant claims a  $T_g$  of 100 deg C or more.

The examiner interpret the glass transition temperature to by a cause effective variable for thermal stability. A high  $T_g$  material would have suitable thermal stability but a material with a  $T_g$  that was too low would have a poor thermal stability.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected a material of a high  $T_g$  thus having suitable thermal stability which would have included compounds having a  $T_g$  in the claimed range, absent unexpected results.



12. **Regarding Claims 27-28**, Tomio discloses an organic electroluminescent device that is a thin film organic multi-layered device as discussed above.

An organic electroluminescent device is viewed as inclusive of the electronic devices mentioned in claims 27-28.

13. **Regarding Claim 22**, Tomio teaches that the organic layer can be applied by vacuum deposition (per claim 19), ink jet method (per claims 20-21) (paragraph 60). Tomio fail to mention a layer applied by a LITI method.

Tomio teaches the device claimed by the applicant with respect to the chemical limitations. The instant limitations with respect to the coating method is viewed as a process limitation.

If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” (In re Thorpe, 227 USPQ 964,966). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to the applicant to come forward with evident establishing an unobvious difference between the claimed product and the prior art product (in re Marosi, 710 F.2<sup>nd</sup>, 802, 218 USPQ 289, 292 (Fed. Cir. 1983, MPEP 2113).

### **Claim Rejections - 35 USC § 103**

Art Unit: 1786

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

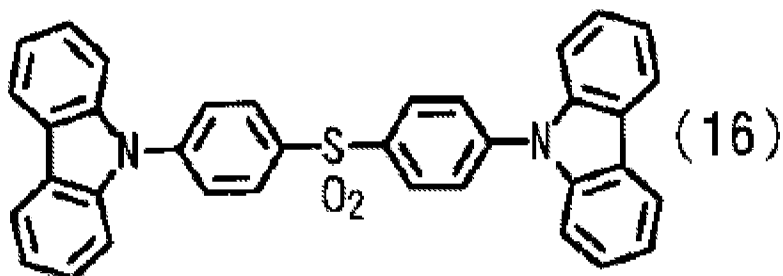
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**14. Claims 1, 3, 4, 5-9, 12-22 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tominaga (US 2003/0168970) in view of Tomio (JP 2004-220931).**

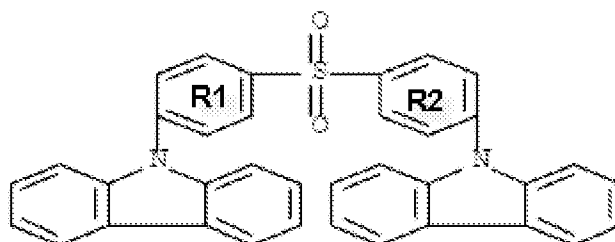
**15. Regarding Claims 1 and 3,** Tominaga discloses an organic electroluminescent device containing an anode, cathode (abstract) and a matrix material (4, 4'-bis (carbazol-9-yl) biphenyl (CBP)) (paragraph 117) doped with a phosphorescent emitter (paragraph 47). The device also has an electron transporting layer containing a phosphorus oxide derivative (paragraph 22). Tominaga also discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17). Tominaga fails to teach a hole blocking material which reads on applicants' Formulas 1-4.

Tomio discloses an organic electroluminescent device which contains organic layers between an anode and a cathode which includes a hole inhibiting (blocking) layer (abstract) composed of Formula 16 (paragraph 47):

Art Unit: 1786



Formula 16 can be represented



Formula 16 reads on applicants' Formula 4 where R1 and R2 are labeled above; Y is S and X is O (per claim 3).

The device containing Formula 16 exhibits drive stability, excellent color purity and high luminous efficacy (abstract).

Both Tominaga and Tomio teach organic electroluminescent devices with organic layers between an anode and cathode which includes hole blocking layers. Tominaga teaches the use of a phosphorus oxide derivative and Tomio teaches the use of sulfoxide derivatives, respectively in hole blocking layers. Phosphorus oxide derivatives and sulfoxide derivatives are viewed as two generic classes of materials for which the prior art recognizes as useful as hole blocking materials. As such, these two classes of

Art Unit: 1786

materials are considered as functionally equivalent and said materials would be readily exchangeable with the expectation of said materials functioning in the hole blocking layer of an organic electroluminescent device in an obviously similar capacity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have replaced the phosphorus oxide derivative of Tominaga with the sulfoxide derivative (Formula 16) of Tomio which reads on the instant limitations since both classes of material are considered by the prior art as functionally equivalent, absent unexpected results.

16. **Regarding Claim 4**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above).

Tominaga fails to mention the percentage of the hole blocking material in the hole blocking layer. The applicant claims a concentration of at least 50%.

Hole blocking materials are used to confine the holes to the emissive region of the device to improve the emission efficiency. The amount of a hole blocking material present is viewed as a cause effective variable that controls the confinement of hole that affect the emission efficiency.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have adjusted the amount of the hole blocking material present in hole

Art Unit: 1786

blocking layer to optimize the blocking of holes which would have included the claimed range, absent unexpected results.

17. **Regarding Claims 19-22**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above). Tominaga discloses that the organic layers can be formed by evaporation by resistance heating, electron beam evaporation, sputtering, molecular deposition, coating and the like. Tominaga fails to mention the exact coating methods claimed by the applicant.

Tominaga teaches the device claimed by the applicant with respect to the chemical limitations. The limitations with respect to the coating method is viewed as a process limitation.

If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." (In re Thorpe, 227 USPQ 964,966). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to the applicant to come forward with evident establishing an unobvious difference between the claimed product and the prior art product (in re Marosi, 710 F.2<sup>nd</sup>, 802, 218 USPQ 289, 292 (Fed. Cir. 1983, MPEP 2113).

Art Unit: 1786

18. **Regarding Claims 27-28**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above). Tominaga discloses an organic electroluminescent device that is a thin film organic multi-layered device (paragraph 4).

An organic electroluminescent device is viewed as inclusive of the electronic devices mentioned in claims 27-28.

19. **Regarding Claims 5 and 26**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above).

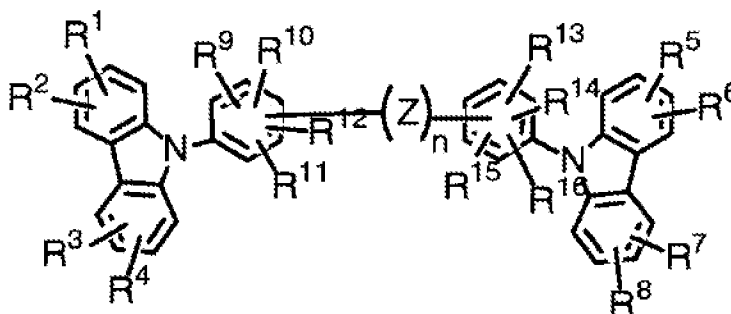
Tominaga also discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17) (per claim 26).

The examiner interprets this to mean that the hole blocking layer is only composed of a single material (per claim 5).

20. **Regarding Claim 25**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of

Art Unit: 1786

Tomio teaches Formula 16 which reads on applicants' Formula 4 (as discussed above). Formula 16 can also be represented as Formula 16A (paragraph 39):



[0040]

the inside of a formula,  $R^1 - R^{16}$  -- each -- independent -- a hydrogen atom and a halogen atom. An alkyl group, an aralkyl group, an alkenyl group, a cyano group, an amino group, an acyl group, A carboxyl group, an alkoxy group, an alkoxycarbonyl group, an aryloxy group, An alkylamino group, an aralkyl amino group, a halo alkyl group, a hydroxyl group, . [ whether an aromatic hydrocarbon group or an aromatic heterocycle group which may have a substituent is expressed, and ] Or  $R^1$ ,  $R^2$  and  $R^3$ , and  $R^4$ ,  $R^5$ ,  $R^6$  and  $R^7$ ,  $R^8$  and  $R^9$ ,  $R^{10}$  and  $R^{11}$ ,  $R^{12}$  and  $R^{13}$ ,  $R^{14}$ , and  $R^{15}$  and  $R^{16}$  may combine with each other, respectively, and may form a ring. Also in general formula (I), Z is synonymous.

[0041]

As  $R^1 - R^{16}$ , specifically A hydrogen atom; fluorine atom, Acyl group; carboxyl groups, such as an alkenyl-group; cyano group; amino group; acetyl group of the carbon numbers 2-6, such as aralkyl group; vinyl groups, such as alkyl-group; benzyl of the carbon numbers 1-6, such as halogen atom; methyl groups, such as a chlorine atom and a bromine atom, and an ethyl group; A methoxy group, An alkoxy group of the carbon numbers 1-6, such as an ethoxy basis; A methoxycarbonyl group, An alkoxycarbonyl group of the carbon numbers 2-6 of an ethoxycarbonyl group etc.

where Z is the sulfur dioxide group (Y is C) and any of R1-R16 can be an organic radical a methyl group.

21. **Regarding Claims 6-9**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 or

Art Unit: 1786

16A of Tomio which reads on applicants' Formula 4 (as discussed above). Formula 16A shows that R1-R16 can be an alkyl group (above).

The examiner interprets an alkyl group to be a  $sp^3$  hybridized carbon atom (per claim 7) which is inclusive of a quaternary carbon (per claims 8 and 9) as in the case of a t-butyl alkyl group.

The presence of a  $sp^3$  hybridized carbon atom such as a quaternary carbon in a t-butyl alkyl group would render the molecule non-planar (per claim 6).

22. **Regarding Claim 12**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above).

Tominaga also discloses that the organic electroluminescent device (paragraph 1) includes matrix materials that includes carbazoles or organometallic complexes (paragraph 47).

23. **Regarding Claim 13**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above).

Tominaga discloses that the device can include the following layers: anode/hole transporting layer/emissive layer/electron transporting layer/cathode. Tominaga also



Art Unit: 1786

discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17). The above structure shows the electron transporting layer (hole blocking layer) next to the cathode.

24. **Regarding Claims 14 and 15**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above).

Tominaga discloses an organic electroluminescent device that contain phosphorescence emitters such as tris (2-phenylpyridyl) iridium (atomic number 77) (paragraph 47). The examiner notes that in the applicants' specification on page 10 that iridium is listed as a preferred metal.

25. **Regarding Claim 16**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above).

Tominaga discloses an organic electroluminescent device that contains phosphorescence emitters such as tris (2-phenylpyridyl) iridium (paragraph 47).

26. **Regarding Claim 17**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer

Art Unit: 1786

containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above).

Tominaga discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17) and has a glass transition temperature of at least 120 deg C (paragraph 19). The applicant claims a glass transition temperature of greater than 100 deg C.

27. **Regarding Claim 18**, Tominaga discloses an organic electroluminescent device containing an electron transporting layer that functional as a hole blocking layer containing a phosphorus oxide derivative which can be replaced with Formula 16 of Tomio which reads on applicants' Formula 4 (as discussed above).

Tominaga discloses that the organic layers are made from sublimable compounds (paragraph 118).

### **Claim Objections**

28. Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The close prior art appears to be Tominaga who teaches a spirobifluorene phosphine oxide which was overcome by applicants' amendments to claim 1.

### **Response to Arguments**

Applicant has amended claim 1 which effectively overcomes the previous phosphine oxide material disclosed by Tominaga. The examiner has applied new art which shows that sulfoxide derivatives were known hole blocking materials and would have been readily exchangeable with phosphine oxide materials at the time of the invention (as discussed above).

Applicant argues that there would be not motivated to exchange the hole blocking materials of Tominaga for another material.

The examiner counters that applicant has claimed very generic formulas that are inclusive of a host of organic classes. The prior art recognized a host of hole blocking materials as the time of the invention which includes the sulfoxide derivatives of Tomio.

A person of ordinary skill in the art would have in no manner been limited, but would have selected from known materials which function in a similar capacity.

Finally, the examiner has applied a new set of rejections based on Tomio alone.

The applicant's arguments with respect to the pending claims have been considered but are moot in view of the new grounds of rejection necessitated by the applicant's amendment.

### **Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

Art Unit: 1786

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 1786

GREGORY CLARK /GDC/  
Examiner  
Art Unit 1786